

Call with Troy Matthews (Breitburn Mgmt) and Marvin Blakesley (Gene George and Assoc)

January 27, 2011

Questions

1. Facility contact (Tom Myers, PO Box 2653, Cody)
Tom Faulkner same address, petroleum engineer
2. Oil only, what do they do with gas?
Do produce gas – just under 200 mcf shallow frontier gas, doesn't contain NGLs – most sell to marathon at circle ridge facility and some portion sold through marathon via surface pipe to circle ridge, other portion heads south sold thru steamboat (pilot butte)
3. # wells (10, 12, 13?). 13 wells oil, 6 gas? No produced water? What do with gas production water?
It is 13.....at Sheldon dome
6 gas well – very little produced water – what they do have goes to evap. Less than a barrel a day. Evap pond – 30x30x6 ft deep evap pond....located west about half mile
4. Amount oil produced per day? Amt wastewater produced day? 560 barrels ww a day vs. 0.082 mgd from Outfall 001 vs 1700 barrels of production water daily. How measure flow at outfall?
Oil produced per day – about 85 barrels/day
Closer to 1900 barrels of production water.
Well test – have a vessel – test treater. Vertical vessel that isolate one well at a time from field through vessel – measures oil on one phase and water on another phase..... test treater is 6ft diameter x 20 ft tall

Pretty consistent volumes daily unless well goes down
5. Walk through process
6. Activities downhole – depth pumping from? (avg depth is around 7000 ft)

There is an active chemical treatment program at this field, including treatment with emulsion breaking chemicals, scale inhibitors, and use of a water clarifier at one well. And corrosion inhibitor (Talk more about this: Where in process do each occur, how often, how much, what is used) do they used corrosion inhibitors?

Stimulation (fracking) how different oil vs. gas

How control for slime molds, iron bacteria, sulfur bacteria – things that gum up system

Products used

One well takes both scale inhibitor and corrosion inhibitor.

1061 is corrosion inhibitor - everything else is NALCO

Scale inhibitor ??

Flushed down casing to prevent scale and corrosion from occurring

Continuously

- One quart per day per well - just at one well - scale and corrosion 15-15 well: EC6485 scale inhibitor, one quart/day, EC1076 corrosion inhibitor 1 qt/day;
- 15A15: EC 6033 water clarifier 1.5 quarts/day; (separate oil and solids and water; takes away oil and solids in water and cleans water up. Corrects reverse emulsion. Final polishing
- Program once / week: downhole treat, vac truck, put in water and chemical and flush wells 715, 615, 915, 815, 9A15 with 10 barrels water to one quart per well of corrosion inhibitor EC1317
- No problems with scaling / corrosion in other 6 wells

No prob with slime mold, iron bacteria, sulfur bacteria that gum up system

NALCO- rob cragoe

a. Maintenance

- i. Frequency
- ii. Compounds / Chemicals Used (CAS #)
- iii. Amount (volume)

b. Stimulation

- i. Frequency (every other year) - last time acid stim? Acid vs. frack? One well every other year fracked; acid stim: prob happen in next 5 years, depends on productivity on well..if slowly declining at predictable rate wont mess with it. If rate drops off at higher rate, then look at some kind of stimulation.
 1. Put it out to bid who does it
 2. Bju, sandgel, haliburton,
 3. Fraks: 24 lb borate crosslink- gel, carrying agent. - use freshwater. Get it from the city whatever's closest to field, Riverton... <15,000 gals. Breaker is mixed with it.
 4. Acid stimulation: HCl, surfactant, certain solvents: they design based
 - ii. Compounds / Chemicals Used (CAS #)
 - iii. Amount (volume)
7. Shut well in - then vacuum overnight. Shut in well head and rig down and leave. Try to recover back to its static pressure, fluid level will drop and pressure

8. When put chemicals down hole, how long it takes to bring it all back out? 18 hours nothing truly flows back in these two fields. Suck it back out through the same production process as normal. Either rod pump or electric submersible pump.
9. How could you differentiated/distinguish flow back water from produced water?
They don't know...no difference...
Avg 4051 tds at Sheldon dome
Possibly TDS as indicator – if using freshwater
10. Form 2C, effluent characteristics – do they account for constituents may be found in flowback water.
Looked at last time renewed and analysis that was required
11. Ephemeral tributary – runs year round? How often does it meet Dry/Pasup Creek? It dries up not too far outside field – from discharge, a mile to 1.5 mile it dries up. Year round before then.
12. UIC permit 2007 – for enhanced oil recovery – permit approved not going to go through with it. Waiting on lease renewable thru tribes....
13. Lab sheets -

Lab sheets

Frac/acid stim volume, which wells, products, company and contact

Nalco contact

Walk through process

- Well → emulsion header (flow lines tie to common line from here, can divert individual well from this system from manifold can direct one well at a time to test treater for testing and rest go through common line) → free water knock out (EC2462 emulsion breaker, used occasionally when emulsion gets bad – rarely used...couple times a year...quart to two quarts a day) (10ft x 30 ft horizontal) (any chemicals used? Most chemicals used out at field...small amount going into header before going to free water knock out – emulsion breaker – aids in water separation. EC2007 Nalco product – surfactant aids in dropping water out of oil....approx a quart to 2 quarts a day, can vary depending on water cut in oil..max 2 quarts/day continuous...) → gravity flow oil phase go to heater treater (heat aids in separation) (<300 barrels)) vs. test treater (what is this?) → water from free water knock and heater treater...out goes to first of two 400 barrel water

holding tanks (2 tanks, each 400 barrel capacity?) set up in series → 200 barrel (skim tank) open top tank for final separation → discharge pit

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- skim tank (size? How often skim? Only as needed, maybe once every other month...How often >0.5 inches? Can you control flow?) → pit one (50'55'6) → → Outfall 001 (flow? How measure?).

also skim 400 barrel tanks

- How long does it move from well to outfall? – about 18 hours